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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,999	11/21/2003	Knut Kahlisch	1890-0011	1506

7590 11/03/2004
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EXAMINER

RAO, SHRINIVAS H

ART UNIT PAPER NUMBER

2814

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/719,999

Applicant(s)

KAHLISCH ET AL.

Examiner

Steven H. Rao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 16-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of paper submitted under 35 U.S.C. 119(a)-(d), claiming priority from German Patent Application No. 10254648.7 filed on November 22, 2002 which papers have been placed of record in the file.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-15 are, drawn to supporting structure for a chip, classified in class 257, subclass 706
- II. Claims 16-22 are, drawn to a method of producing a supporting structure for a chip, classified in class 438, subclass 122.

Inventions Gr. I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) (MPEP § 806.05(f)).

In the instant case that the product as claimed can be made by another and materially different process namely applying of a chip to the interconnect layer as opposed to applying of the chip to the supporting structure

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

Art Unit: 2814

During a telephone conversation with Mr. Harold Moore (37,892) on October 18 & 21/ 2004 a provisional election was made without traverse to prosecute the invention of Gr. I, claims 1-15

Affirmation of this election must be made by applicant in replying to this Office action.

Claims 16-22 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicants' are requested to cancel claims 16-22 without prejudice to claiming the subject matter covered by claims 16-22 in divisional/s as necessary.

Information Disclosure Statement

No IDS to date has been filed in this case.

Specification

The disclosure is objected to because of the following informalities: Applicant cooperation is appreciated to correct the numerous error in specification and claims due to a translation into English from a foreign document which contains grammatical and idiomatic errors.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2814

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 12 the phrase "laterally completely closed" renders the claim indefinite because the term "laterally completely closed " with reference to the bonding channel is not clear what is included/excluded by the recitation " laterally completely" closed.

Further neither the Applicants' specification nor the knowledge of one skilled in the prior art clarifies nor renders the above cited portions clear to understand what Applicants' intend to include/exclude from the above recitation.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

(Paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office Actions as of June 200. Paper copies of foreign patents and non-patent literature will continue to be included with Office Actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial

sources. Applicants' are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted).

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovac et al. (U.S. Patent No. 4,881,885, herein after Kovac)

With respect to claim 1, Kovac describes a supporting structure for a chip, comprising: a supporting substrate with a bond opening therein (Kovac figures 2-3 #10 with opening 16, col. 3 lines 60-67) ; an interconnect layer on the supporting substrate,(Kovac figure 4 # 12) in which a bonding channel overlapping with the bond opening is formed; (Kovac col. 4 lines 4-6, not illustrated in figures) and an escape prevention structure for the bonding channel, (Kovac figure 4 # 26,30) to enable escaping of air from the bonding channel and to prevent the encapsulation material from escaping from the bonding channel on introducing encapsulation material into the bonding channel after the applying of a chip to the supporting structure.

The recitation, " to enable escaping of air from bonding channel and to prevent the encapsulation material from escaping from the bonding channel on introducing encapsulation material into the bonding channel after the applying of a chip to the supporting structure." are taken to be functionally inherent properties.

It is elementary that the mere recitation of a newly discovered function or property, inherently possessed by things in the prior art , does not cause a claim drawn

Art Unit: 2814

to distinguish over the prior art. Additionally, where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing, novelty in the claimed subject matter, may in fact be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on. *In re Swinehart*, 169 USPQ 226 (CCPA 1971).

(It is noted that Kovac figure 4, etc. and abstract lines 2-12 describe the functionally inherent property to enable escaping of air from bonding channel and to prevent the encapsulation material from escaping from the bonding channel on introducing encapsulation material into the bonding channel after the applying of a chip to the supporting structure.

With respect to claim 2 Kovac describes the supporting structure of claim 1, wherein the escape prevention structure is designed to prevent escaping of the encapsulation material due to the capillary effect. (Kovac col. 4 lines 50-54)

With respect to claims 3 and 4 Kovac describes the supporting structure of claim 1, wherein the escape prevention structure includes an opening with such a cross-sectional area, so that escaping of the encapsulation material caused by the capillary effect is prevented. (Kovac Abstract last 6 lines, col.4 lines 50-54 and figures 1-5 ,etc.).

With respect to claim 5 Kovac describes the supporting structure of claim 4, wherein the barrier structure is connected to the interconnect layer. (Kovac col. 4 lines 17-18).

Art Unit: 2814

With respect to claim 6 Kovac describes the supporting structure of claim 4, wherein the barrier structure is formed integrally with the interconnect layer. (Kovac figures 30 and 32 –formed integrally).

With respect to claim 7 Kovac describes the supporting structure of claim 4, wherein the barrier structure extends across the entire width of the bonding channel. (Kovac e.g. figure 4 30 extends across wider portion above 20).

With respect to claim 8 Kovac describes the supporting structure of claim 4, wherein the barrier structure is formed, so that a cross-section of the bonding channel tapers in a direction to the lateral end. (

With respect to claim 9 Kovac describes the supporting structure of claim 4, wherein the barrier structure has a convex shape.

With respect to claim 10 Kovac describes the supporting structure of barrier structure is disposed in the bonding channel and spaced from the interconnect layer. (Kovac e.g. figure 4 , 30 disposed in 14, 20 spaced from 32).

With respect to claim 11 Kovac describes the supporting structure of claim 4, wherein the supporting structure of the escape prevention structure includes a recess in the supporting substrate (Kovac figure 4 # 20).

With respect to claim 12 Kovac describes the supporting structure of claim 11, wherein the bonding channel is laterally completely closed. (Kovac figure 4 channel closed by 30).

With respect to claim 13 Kovac describes the supporting structure of claim 11, wherein the interconnect layer is disposed on a surface of the supporting substrate,

Art Unit: 2814

wherein the recess on the surface extends across a sidewall of the bonding channel. (Kovac figure 3, 32 on surface of 12, recess 20 along side wall of bonding channel).

With respect to claim 14 Kovac describes the supporting structure of claim 11, wherein the recess is disposed in a region of the bonding channel, wherein the recess extends from a first surface of the supporting substrate to a second surface of the supporting substrate. (Kovac figure 4 recess 20 extends from top to bottom surface of support substrate 12).

With respect to claim 15 Kovac describes the supporting structure of claim 1, wherein a chip is disposed on the interconnect layer.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (571) 272-1718. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7724.

LONG PHAM
PRIMARY EXAMINER

Steven H. Rao

Patent Examiner